

<p align="center">10 INHERENT LUMINESCENCE</p>	<p align="center">Page 1 of 1</p>
<p align="center">Division of Forensic Science</p> <p align="center">LATENT FINGERPRINTS PROCEDURES MANUAL</p>	<p align="center">Amendment Designator:</p>
	<p align="center">Effective Date: 29-January-2004</p>
<div data-bbox="643 291 1055 321" data-label="Section-Header"> <h2 align="center">10 INHERENT LUMINESCENCE</h2> </div> <div data-bbox="151 354 422 384" data-label="Section-Header"> <h3>10.1 INTRODUCTION</h3> </div> <div data-bbox="207 415 1549 630" data-label="Text"> <p>The use of alternate light sources in conjunction with various chemical techniques and dyes have proven very effective in visualizing latent impressions. Substances found in latent print residue may luminesce when illuminated by the proper wavelength of light and viewed with the appropriate filters. B-vitamin complexes, that are a natural component of perspiration, may be the cause of this reaction. Various contaminants such as cosmetics may become part of latent print residue and may inherently luminesce as well. Additionally certain materials such as styrofoam and galvanized or zinc plated metal are observed to consistently produce impressions that will luminesce without the application of chemical processing or dyes. This inherent luminescence allows for examination of items that may be destroyed by other techniques.</p> </div> <div data-bbox="207 659 1549 751" data-label="Text"> <p>Proper safety precautions including avoiding skin exposure and proper eye protection with appropriate optical densities should be utilized when operating ultraviolet light sources, or alternate light sources. Consult the appropriate users manuals for the safe use and appropriate eye protection for the specific piece of equipment being utilized.</p> </div> <div data-bbox="151 781 418 810" data-label="Section-Header"> <h3>10.2 PREPARATIONS</h3> </div> <div data-bbox="207 842 571 871" data-label="Text"> <p>No specific preparations required.</p> </div> <div data-bbox="151 903 477 932" data-label="Section-Header"> <h3>10.3 INSTRUMENTATION</h3> </div> <div data-bbox="207 963 454 993" data-label="Text"> <p>Alternate Light Source</p> </div> <div data-bbox="151 1024 734 1054" data-label="Section-Header"> <h3>10.4 MINIMUM STANDARDS AND CONTROLS</h3> </div> <div data-bbox="207 1085 380 1115" data-label="Text"> <p>Not Applicable.</p> </div> <div data-bbox="151 1146 565 1176" data-label="Section-Header"> <h3>10.5 PROCEDURE OR ANALYSIS</h3> </div> <div data-bbox="207 1207 1549 1388" data-label="Text"> <p>The procedure for this technique consists of examining the item with the alternate light sources using appropriate filtration. Common wavelengths used are 488 nm, 510 nm and 514.5 nm. In most cases a Wratten #21 filter or the orange laser filters are appropriate for examination. Some success may be seen with the use of ultraviolet light sources and the various wavelengths produced by alternate light sources. The examiner must choose the appropriate filters and eye protection for these light sources and the wavelengths selected. All observed impressions must be photographed using the appropriate films and filters.</p> </div> <div data-bbox="151 1419 623 1449" data-label="Section-Header"> <h3>10.6 INTERPRETATION OF RESULTS</h3> </div> <div data-bbox="207 1480 1549 1635" data-label="Text"> <p>Items can be examined for inherent luminescence without destruction of the item. In addition many surfaces should be routinely examined using this technique as it has been shown to produce consistent results. The item being examined may luminesce and this background luminescence may improve the contrast of visible impressions much as the use of metal salt post treatment of ninhydrin developed impressions. This non-destructive process is a relatively simple technique that has been proven to be very successful in producing positive results.</p> </div> <div data-bbox="151 1665 389 1694" data-label="Section-Header"> <h3>10.7 REFERENCES</h3> </div> <div data-bbox="207 1726 1549 1850" data-label="List-Group"> <ol style="list-style-type: none"> 1. Dalrymple, Brian E.; J. M. Duff; E. Roland Menzel. "Inherent Luminescence of Fingerprints by Laser"; <i>Identification News</i>, January 1977, 22, 1, 3-6. 2. Menzel, E. Roland. <i>Fingerprint Detection with Lasers</i>; Marcel Dekker: NY, 1980; pp 108. </div> <div data-bbox="1490 1879 1549 1908" data-label="Text"> <p align="right">◆End</p> </div>	